



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/518,204	03/03/2000	Paul Kwok Keung Ho	CS99-060	7394

7590 04/22/2002  
George O Saile  
20 McIntosh Drive  
Poughkeepsie, NY 12603

EXAMINER

SMETANA, JIRI F

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 04/22/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/518,204

Applicant(s)

KEUNG HO ET AL.

Examiner

Jiri F. Smetana

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al., U.S. Patent No. 5,770,095, in view of Ng et al., *Synthesis of Some Carbonyl Derivatives of BTA and Determination of Their Inhibitive Properties for Copper in 3% NaCl Solution*, Corrosion Science and Protection Technology, Vol. 9 (3), July 1997, pp. 201-204.

Sasaki discloses a polishing method comprising of forming a layer made of material containing a metal of copper as a main component over a substrate having recessed portions on a surface thereof so as to fill the recessed portion with the metal layer (Figures 2A and 2B); polishing the metal layer by a chemical mechanical polishing method using a slurry including a polishing agent containing a chemical agent being responsible for forming a protective film on the surface of the metal layer by reacting with the material containing a metal as a main component, wherein the chemical agent includes a benzotriazole (column 3, lines 37-54), and an etching agent of H<sub>2</sub>O<sub>2</sub>, HF, and amino acid being responsible for etching the material containing a metal as a main component (column 4, lines 1-12; column 8, lines 29-32); wherein the protective chemical agent present in the slurry is 0.001 mole/l (column 6, line 42).

Sasaki does not disclose wherein the chemical agent includes at least a carbonyl derivative of benzotriazole. However, Ng et al. discloses wherein the chemical agent includes at

least a carbonyl derivative of benzotriazole (translation: figure on page 6) for a protective layer for copper (translation: page 2, lines 21-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the inventions of Sasaki in view of Ng et al. wherein the chemical agent includes at least a carbonyl derivative of benzotriazole because Ng et al. teaches that a carbonyl derivative of benzotriazole has a higher inhibition rate than BTA in that the carbonyl derivative of benzotriazole produced a chelation reaction with copper ions, creating a protective film with more intensive hydrophobic ability and higher resistance against penetration (translation: page 9, lines 20-23) and can be used for protection of copper on printed circuit boards (translation: page 2, lines 21-23).

As to claims 5, 6, 12, 13, 17, and 18, the selection of concentration parameters would have been obvious: Normally, it is to be expected that a change concentration would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art... such ranges are termed critical ranges and the applicant has the burden of proving such criticality... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller* 105 USPQ 233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmscher* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934). And as we have here, Sasaki teaches

Art Unit: 1746

wherein the chemical agent responsible for forming a protective film on the surface of the copper is present at a concentration of 0.001 mole/l (column 6, line 42) or a ration of 1/1000 to 3/100 (column 14, lines 22-25). Concentration limitations are obvious absent a showing of criticality. *Akzo v. E.I. du Pont de Nemours* 1 USPQ 2d 1704 (Fed. Cir. 1987).

***Response to Arguments***

3. Applicant's arguments with respect to claims 1, 3, 4, 7, 8, 10, and 11 have been considered but are moot in view of the new ground(s) of rejection.

***Response to Amendment***

4. The indicated allowability of claims 2, 5, 6, 9, and 12-18 is withdrawn in view of the newly discovered reference to Ng et al. Rejections based on the newly cited reference is recited above.

5. Objection to claims 7, 8, and 14 is withdrawn pursuant to Applicant's amendment.

6. Rejection of claims 4-6, 11-13, and 16-18 under 35 U.S.C. 112, second paragraph, is withdrawn pursuant to Applicant's amendment.

7. Claims 1-18 are rejected under 35 U.S.C. 103(a) as recited above.

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiri F. Smetana whose telephone number is (703)605-1173. The examiner can normally be reached on Monday-Friday (7:30am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (703)608-4333. The fax phone numbers for

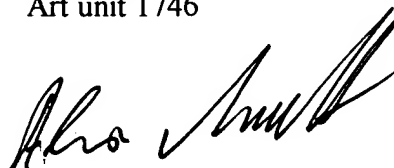
Art Unit: 1746

the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Jiri F. Smetana  
Patent Examiner  
Art unit 1746

jfs  
April 9, 2002

A handwritten signature in black ink, appearing to read 'Alex Markoff', written in a cursive style.

ALEXANDER MARKOFF  
PRIMARY EXAMINER